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ABSTRACT

Each year commonwealth, state, and territory governments allocate millions of dollars to alleviate differing kinds of disadvantages among local communities in Australia. This paper is concerned with the allocation of resources to remote and rural areas by the Commonwealth Government on a national basis. Current formulas and resource allocation methodologies are not accurately identifying those populations that have the greatest degree of disadvantage in accessing goods and services. Impediments in allocating resources include an absence of an objective measure of relative access to services and a reliable definition of rural and remote areas. The Service Access Frame (SAF) is a three-dimensional objective model that quantifies the relative access of any population center to activities and services. The three components of the model include population center size, time cost distance unit, and economic resources. The three parts combine to provide a profile and a score for a population center that identifies the level of services to be expected, the cost for persons accessing the service from another area, and the population center's ability to pay for the service. This model will allow policymakers to allocate resources on the basis of identified need rather than geographical location. It also provides a tool by which current formula and resource allocations to rural areas can be tested and evaluated. Sixteen figures are attached. (LP)

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Quantifying access to services in remote and rural Australia

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TO THE EDUCATIONAL RESOURCES
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The topic I wish to address is one that concerns all people living in rural and remote Australia. Anyone who lives in rural and remote Australia is faced every day with the issue of either accessing or providing services of various kinds such as education or health care or obtaining or providing goods. The more distant people are from a service or from the clientele they are trying to service, the more difficult it is in terms of cost, transport or communication to overcome the barriers that distance imposes. It is a well established fact that distance translates into cost and unfortunately the only way to overcome the disadvantage of distance is by incurring costs. Only by being able to quantify these costs can the real disadvantage of distance be measured. How this disadvantage is measured is the focus of this paper.

Why Quantifying Access to Services is Important

From the earliest days of the federation it was acknowledged that there were disparities between the founding colonies (later states) in their respective economic bases and stages of economic development. It was because of these disparities that the states agreed, as the price of becoming a unified nation, to the transfer of funds from the states with larger populations and with more advanced development to the less populated and less developed states. The rationale for this transfer was to ensure that the poorer states would be able to discharge their obligations as members of the federation and provide all states with a level of funding to enable them to function at a level not appreciably below that of the other states.

This was the 'Principle of Fiscal Equalisation' which is the *raison d'être* of the Commonwealth Grants Commission. In short it was agreed and understood that in the interests of a developing nation the states would share the burden of development and the provision of services. The Commonwealth's commitment to fiscal equalisation is still being voiced and resources still allocated, although the methodologies to achieve this are somewhat questionable.

Every year commonwealth, state and territory governments allocate millions of dollars to alleviate differing kinds of disadvantage. This paper is particularly concerned with the allocation of resources to remote and rural areas by the Commonwealth Government on a national basis. The major allocation of resources is to address disadvantage in rural and remote areas and target populations that have restricted access to services due to population dispersion and geographic isolation. Some examples of that commitment can be evidenced by the fact that over the last decade the Commonwealth Government has introduced programs such as the

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Country Areas Program which aims to 'alleviate the substantial and enduring educational disadvantage of many country children and their families which stems from restricted access to social, cultural and educational activities and services' (Commonwealth Schools Commission, 1982, p49).

According to the 1992 Administrative Guidelines published by the Department of Employment, Education and Training the objective of the Country Areas Program is to assist 'primary and secondary schools and community groups...disadvantaged by restricted access to social, cultural and educational activities and services, as a result of geographic isolation' (DEET, 1992, p103).

There is further evidence for that commitment. For example, in 1987 the Commonwealth introduced a policy statement on Rural and Regional Australia, in which one of the key policy aims was 'to ensure that all Australians have the opportunity to enjoy a high standard of living through vigorous and sustainable economic development, supported as necessary by a full range of public services' (Hawke, 1989, p2). This was reaffirmed in the document entitled 'A Fair Go' (1989 p1), in which the Commonwealth acknowledged that the rural sector has a key role in the process of the nation's structural adjustment and future. It was important, therefore, that rural Australians have adequate access to education and training and the other support services available to their fellow Australians.

Unfortunately the repeated commitments of support to rural and remote populations is not reflected in either the Department of Employment, Education and Training specific purpose programs or in the Commonwealth Grants Commission's Population Dispersion resource allocation methodologies. If rural and remote disadvantaged groups are to be assisted it is essential that the formulae and resource allocation methodologies accurately identify those populations that have the greatest degree of disadvantage in accessing goods and services.

Impediments To Allocating Resources To Rural and Remote Areas

There are two major impediments in allocating resources to overcome the restricted access of remote and rural populations. The first one is that the Commonwealth is reluctant to transfer resources from the densely populated and politically strong states to the large sparsely populated politically weak states. This may be politically expedient but it undermines to a large extent the fundamental principles of both social-justice and fiscal equalisation.

The second impediment is the absence of an objective measure of relative access to services or a reliable definition of rural and remote areas. It is this second factor that will be the focus of this paper, central to which is a definition of what constitutes a rural or remote area.

Over the last decade there have been several attempts to define rural and remote areas. Different approaches have been tried using population density (Holmes, Sparselands, 1981), time/distance models (Griffith, 1983), distance from various population centres or groupings of population centres (Faulkner and French, 1983) and calculations of relative space within

Australian Bureau of Statistics levels of data collection (Arundell, Garnaunt and Wilton, 1991).

Other approaches include that used by the Australian Taxation Office (Taxation Zones Commonwealth Grants Commission, 1988, p182), the Grants Commission Remoteness definition (Commonwealth Grants Commission, 1988), the Bureau of Transport Economics Access to Services (1980), the Commonwealth Schools Commission's (now DEET's), and the Country Areas formula. All of the above have attempted to define rural and remote areas without success. To provide a clearer understanding of the issues a series of maps (attached) will be used to demonstrate the problems that researchers face in trying to define rural and remote areas or relative access to services.

Previous and current approaches are summarised briefly. However, they provide an interesting insight to the problems facing a researcher in this area. Figure 1 is the first attempt to determine thresholds of access to services by Griffith in 1983.

This map was developed after consultation with officers from several of the states who had first hand experience of living and working in rural and remote areas. These consultations resulted in the development of two service access thresholds. One at 150 kms from >10 000 population centres and one at 300 km.

These distances were determined on the basis that 150 km was about the limit a person would normally travel by road to obtain a service and be able to return the same day. The 300 km threshold was thought to be the distance that would require a person to overnight at the population centre providing the service.

Although this approach was subjective it appeared to have some face validity and the map was adopted by the 1985 Commonwealth Country Areas Review Committee. The map was also adopted by the 'Schooling in Rural Australia' report after some rather crude modification. (Figures 2 and 3) The problem with this approach is that it is subjective and divides population centres crudely into categories on the basis of distance.

Holmes (1981) used population density to develop his classification of 'Sparselands' (Figure 4) whereas distance from various population centres or groupings of population centres was used by Faulkner and French, (1983) (Figure 5). Figure 6 demonstrates the comparability of Holmes 'Sparselands' with Faulkner and French's -6 remoteness contour. The Holmes approach relies entirely on population density as a measure of relative access. The approach does not differentiate between areas of like population density having differing access to services. Faulkner and French used an approach that classified areas into regions of differing degrees of remoteness but did not allow for differences in service access within those areas, nor do the degrees of remoteness allow the relative access to services to be quantified.

Calculations of relative space within Australian Bureau of Statistics (ABS) levels of data collection was used by Arundell, Garnaunt and Wilton (1991) (Figure 7). The major problem with this approach is that the classification relies on ABS data aggregated at the Local Government Area (LGA) and Statistical Local Area (SLA) level, thereby failing to show the

wide differences of access of population centres in sometimes vast SLA's and LGA's.

Other approaches by the Australian Taxation Office Taxation Zones (Figure 8), the Grants Commission remoteness definition (Figure 9), the Bureau of Transport Economics (1980) and access to services (Figure 10) all attempted to define rural and remote boundaries. These approaches rely heavily on SLA and LGA level data, thereby aggregating and equalising the relative access of all population centres in those LGA's and SLA's.

Finally, in 1990, the Northern Territory Department of Education undertook an extremely detailed mapping exercise in an attempt to overcome the previous problems in using population density as a method of determining the relative remoteness of population in Australia. This approach divided Australia into 25 km x 25 km geographical units to be able to identify pockets of sparse population even in densely populated areas. The map (Figure 11) provides a clear indication of population density in Australia and was used in the Australian Education Council's 'National Report on Schooling in Australia' (Statistical Annexe 1989 p6). Although the map provides a very detailed analysis of population density it does not provide a clear cut demarcation of urban, rural and remote areas.

All of the above approaches fail to provide an objective method of defining rural and remote or relative access to services. The reason for this failure can be attributed to various factors, such as subjective elements being adopted in the approaches, or by using Australian Bureau of Statistics (ABS) data units of a size, such as Statistical Local Areas (SLA) and Local Government Areas (LGA) that are too crude to identify the characteristics of remote areas and the population centres that are in them. Wherever the boundary is drawn there are still differing degrees of population dispersion and access to services on either side of the boundary. What is needed is a new approach, an approach that is logical, objective and can classify population centres on the basis of their relative access to services. This was the specific purpose for which the Service Access Frame was developed.

A New Approach - The Griffith Service Access Frame

The 'Service Access Frame' (SAF) is a three dimensional model objectively derived to quantify relative access to activities and services. It should be emphasised that whilst the SAF is a specific model, its applications are flexible enough to provide a variety of methods whereby clients can approach answers to specific problems.

The Service Access Frame is a model using several component parts to quantify the relative access of any population centre to services. To do this accurately the model has to be capable of being service specific, as people may access different services from different service centres. The basic unit of population analysis used in the approach is the ABS Collection District. This allows detailed analysis of the populations in population centres and geographical areas to be undertaken. In this model each population centre is given an individual Service Access Profile.

The Service Access Profile is developed using the Service Access Frame. The Service Access Frame is built from three elements that quantify the relative access of the population centre.

1. **Population Centre Size** is the first leg of the frame. Population centre size is a well established indicator of the range of services available within the population centre. The validity of using population centre size and Central Place Theory in Australia has been established by research in Tasmania (Scott 1964), South Australia (Smailes 1969) and Queensland (Dick 1971).
2. **Time Cost Distance Unit.** The Time Cost Distance Unit allows the relative time, cost and distance from the service centre to be calculated for each population centre. The time/cost/distance unit incorporates the average distance travelled by the average motor vehicle on all road surfaces per hour. The cost of the traveller's time is calculated by using the national modal wage. Vehicle costs are calculated on the basis of depreciation and fuel consumption which are built into a standardised national unit. Air travel can also be built in.
3. **Economic Resources** available to the population of the centre being assessed are calculated from the Australian Bureau of Statistics Index of Economic Resources (ABS 1990). The Economic Resources Index identifies the resources that are available to a Community to overcome an access to services disadvantage. The three components of the Service Access Frame are combined to derive a service access score.

The three component parts, or legs, of the Service Access Frame combine to provide a profile and a score for each population centre in Australia. The profile identifies the level of services to be expected in the centre and what the cost will be for persons accessing the service from another centre in time and monetary value. The population centre's ability to pay for access to the service is taken into account by the third leg. By adopting this approach the geographical location of a centre, whilst still a major component of the profile, is not the determinant of its relative access status.

Population size and economic resource status allow a more discriminatory profile of access to services to be constructed.

Advantages of the Service Access Frame

An advantage of the Service Access Frame is that it will identify population centres that have limited access to services in the densely populated areas whilst still identifying the greater disadvantage of access to services in centres distant from metropolitan areas.

Another major advantage of this approach is that it does not need the artifice of a boundary to identify relative access to services. The approach is objective as every element of the frame rests on hard data or on established geographical theory.

Finally the advantage to administrators is that the Service Access Frame allows extra indicators to be added to more specifically targeted needs. An example would be if it was decided to add

an Educational and Occupation dimension to the frame. This could be achieved by ranking the population centres that score below the Australian mean on the Index of Education and Occupation and add them onto the Service Access Frame. The Frame is designed to be a very adaptable and efficient targeting tool.

The practical application of the Service Access Frame can be assessed by demonstrating how it is applied to a specific service. In an hypothetical model it is assumed that a service can only be provided from the nearest capital city. Figure 12 shows the time/cost/distance bands for calculating the distance from the State and Territory Capitals.

The hypothetical model shows the locations that suffer the greatest distance disadvantage. To determine the profile of any population centre one must determine its population and score it on the first leg of the frame. Then the time/cost/distance bands are calculated between the recipient population centre and the service centre. Finally the economic resources score is calculated and the figures totalled using a score derived from their relative weightings. This score, the Service Access Score, allows population centres to be compared objectively for relative access to that service.

In Figure 13, state boundaries have been included to demonstrate the distortion that can occur in accessing services from the nearest service centre, in this case the nearest state capital. Towns adjacent to service centres in other states cannot access services that are a state responsibility. Education is a state responsibility and as such is subject to a state border distorting the access to that service.

Access models and maps can be developed for any service. Once the service and the service delivery centre is identified it is a simple matter to build a discrete service frame for that service. Figures 14 and 15 show the flexible nature of the frame using service centres of 20000 plus population at the national level and at a state level in New South Wales. Figure 16 shows the situation in Queensland for service delivery centres with more than 10000 people.

Access to services can be aggregated to provide comparative access data between the states and Territories. Statistics for population analysis can be derived from ABS Collection Districts the data that underpins the Service Access Frame.

Conclusions

Population density and crude ABS data analysis has failed to provide a meaningful measure of access to services. Boundaries defining rural, remote and urban are relatively meaningless in calculating eligible target groups for disadvantaged funding because of their crudity.

The Service Access Frame is a model that defines access to services on objective data that can withstand critical analysis. The Service Access Frame will allow population centres to be targeted on the basis of their Service Access Score rather than on the basis of their geographical location in relation to an often meaningless boundary.

The Service Access Frame, if utilised at the national and state level, will allow policy makers to allocate resources on the basis of identified need. It will also provide a tool by which current formulae and resource allocations to rural and remote areas can be tested and evaluated.

Bibliography

Arundell L, Garnaunt J and Wilton J (1991) *Rural, Remote and Metropolitan Regions Clarification*, draft, Canberra: Rural and Provincial Policy Unit, Department of Primary Industries.

Bureau of Transport Economics, *Basic Characteristics of General Aviation in Australia*, Canberra: AGPS.

Commonwealth Department of Employment, Education and Training, Commonwealth Programs for Schools (1991), *Administrative Guidelines*, Canberra: AGPS.

Commonwealth Departments of Employment, Education and Training and Primary Industries and Energy (1989) *A Fair Go*. Canberra: AGPS.

Commonwealth Grants Commission (1988) *Working Papers*, p182.

Commonwealth Schools Commission (1982) Canberra: AGPS.

Dick R S (1971) 'Definition of the Central Place Hierarchy of the Darling Downs Queensland', *Queensland Geographical Journal*, No 1.

Faulkner, H W and French S (1983) *Geographical Remoteness: Conceptual and Measurement Problems*, Paper No 54, Canberra: Bureau of Transport Economics.

Hawke, R J (1989) *Statement for Rural and Regional Australia*. Canberra: AGPS.

Lonsdale, R E and Holmes J H. (1981) 'Settlement Systems in Sparsely Populated Regions'. *The United States and Australia*. Sydney: . Permagon Press.

Scott P (1964) 'Hierarchy of Central Place in Tasmania', *Australian Geographer*, vol 9 (3).

Smailes P J (1969) 'Some Aspects of the South Australian Urban System', *Australian Geographer*, vol 11, (1).

FIGURE 1: Population Distribution (Griffith, 1983)



FIGURE 2: Rural Australia and Population Distribution (Schools Commission, 1987)

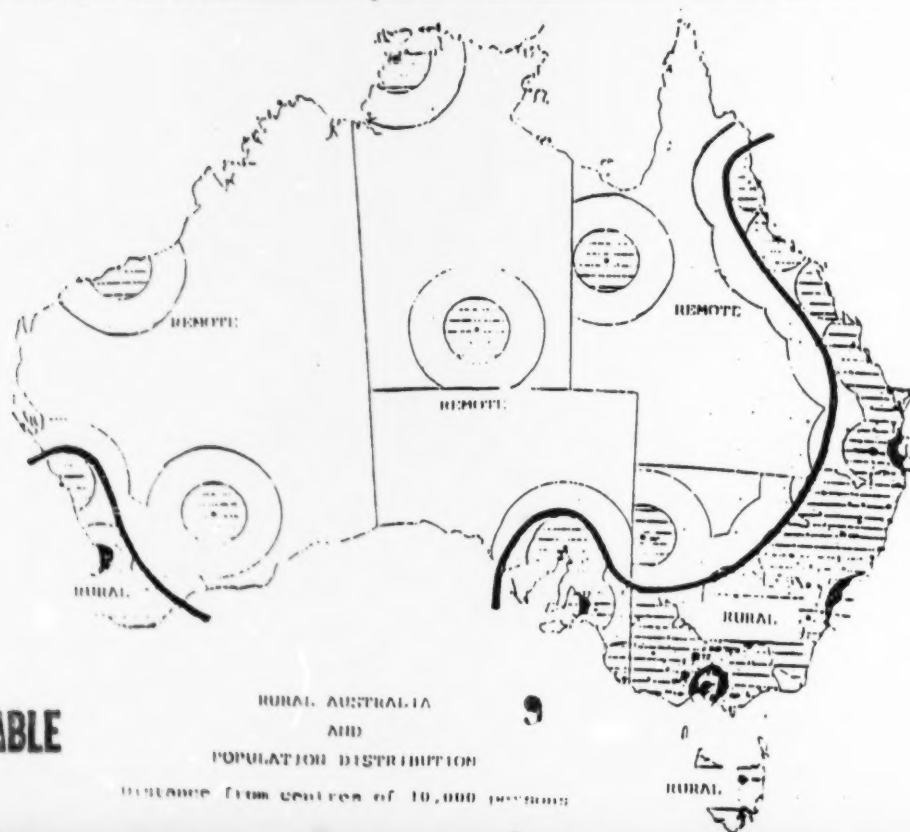


FIGURE 3: Definitional map of rural Australia (Schools Commission, 1987)



FIGURE 4: Sparselands in Australia (Holmes, 1981)

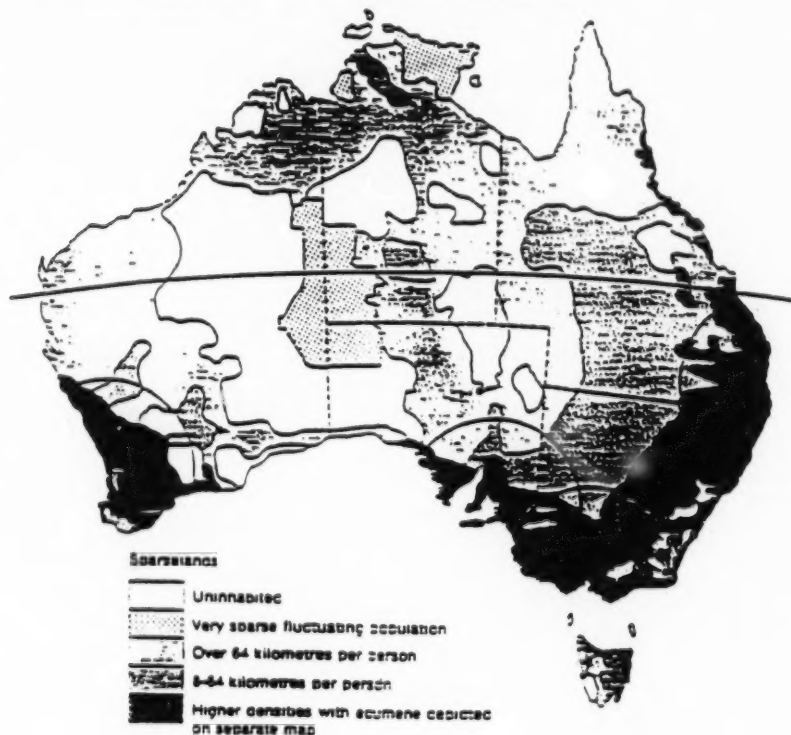


FIGURE 5: Contours of Remoteness (Faulkner and French, 1983)



FIGURE 6: Remote regions within Australia: Comparison of -6 remoteness contour (Faulkner and French) and Holmes' boundary of the sparselands (Faulkner and French, 1983)



FIGURE 7: Rural, remote and metropolitan Australia: A distance-based regional classification (Arundell, Garnaut and Wilton, 1991)

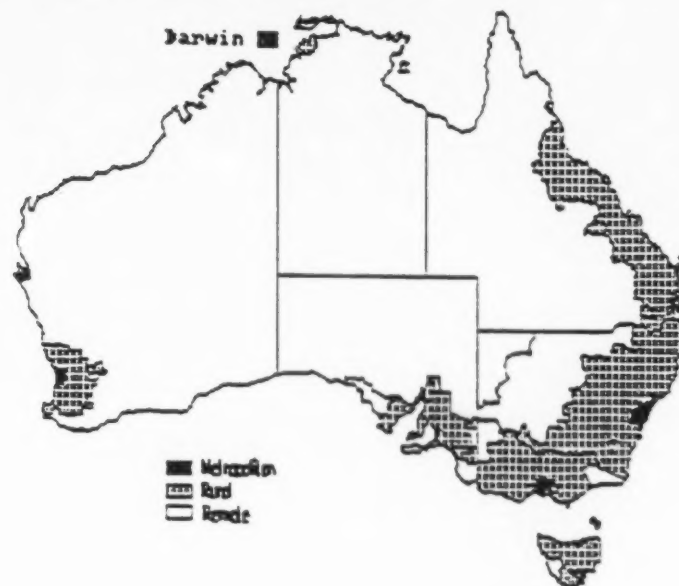


FIGURE 8: Zones of remoteness identified for taxation purposes

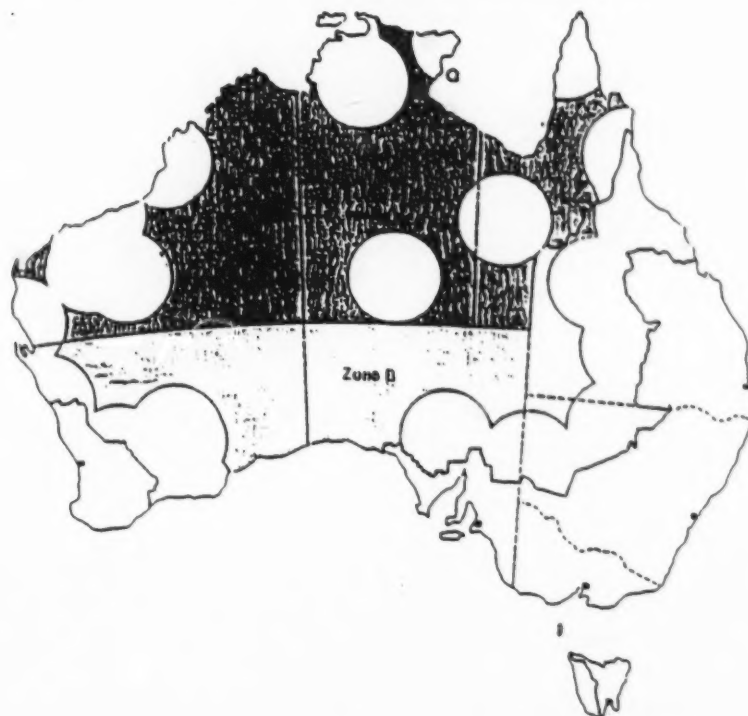


FIGURE 9: Rural, remote and metropolitan regions (Bureau of Transport Economics, 1980)

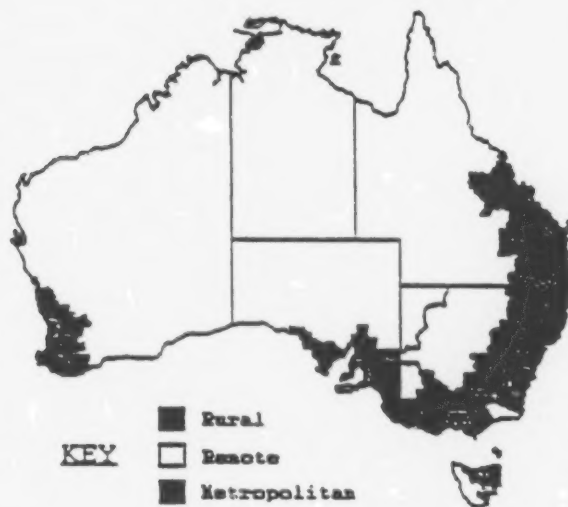


FIGURE 10: Access to Services (Grants Commission)



FIGURE 11: National population density analysis (NT Department of Education, 1990)

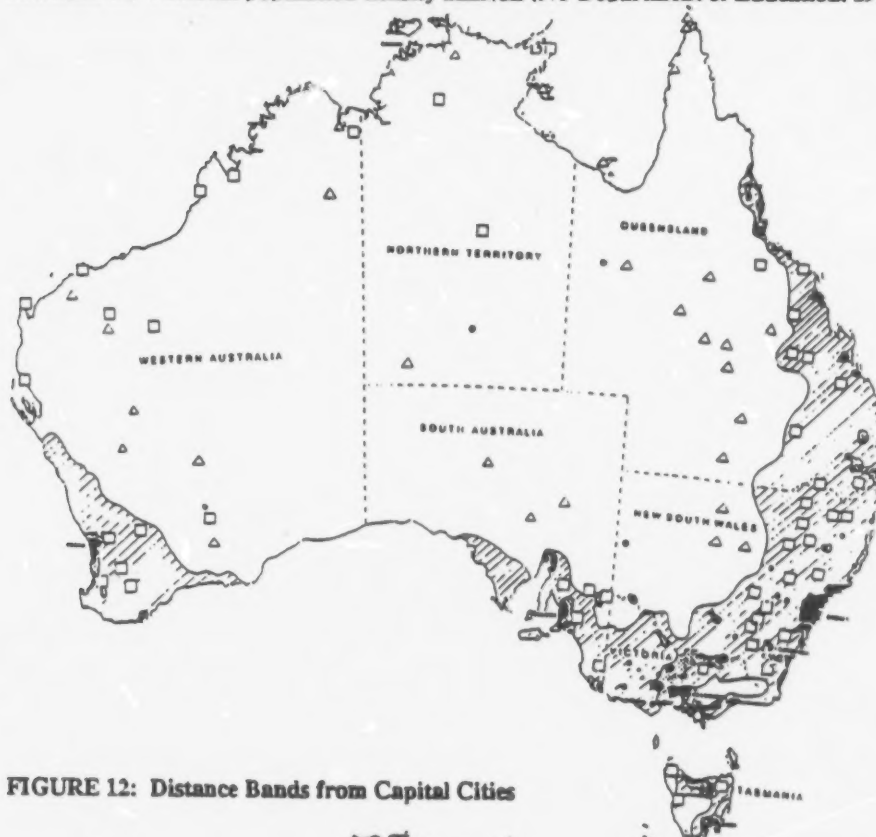


FIGURE 12: Distance Bands from Capital Cities

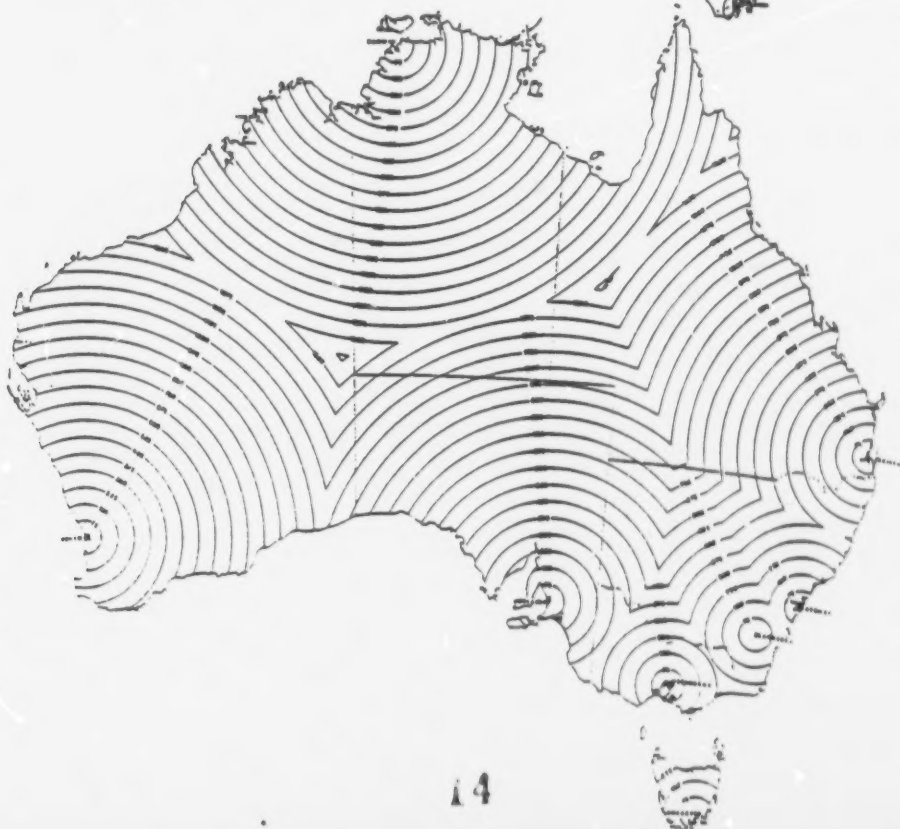


FIGURE 13: Distance Bands from Capital Cities with State Boundaries



FIGURE 14: Distance Bands from Service Centres with 20 000+ Population



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FIGURE 15: Distance Bands applied to New South Wales Service Centres

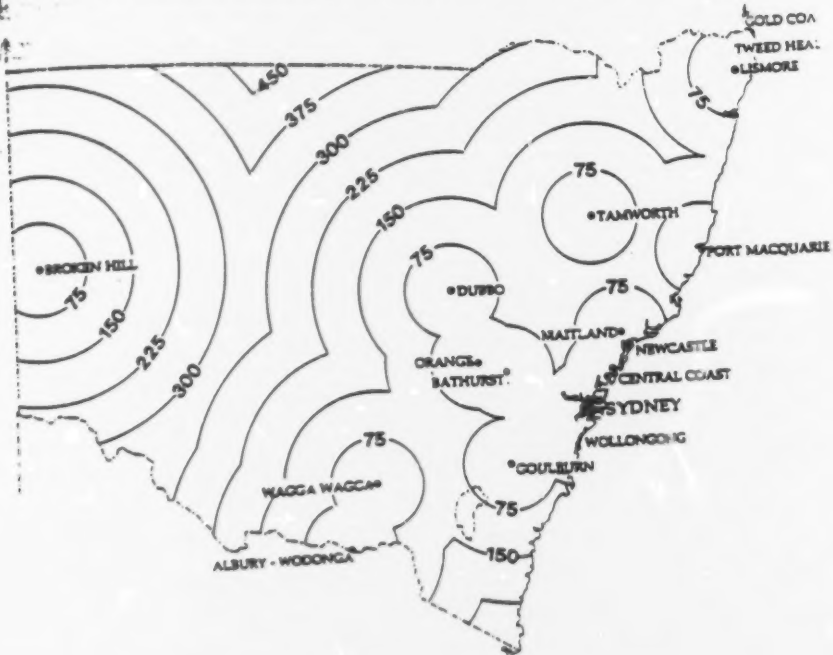


FIGURE 16: Distance Bands applied to Queensland Service Centres

